

2022 Student Research Case Study Challenge: Football/Soccer

OVERVIEW

The country of Rarita has decided that it would like to participate in the world of International Football.¹ Their goal is to qualify for the international Football and Sporting Association (“FSA”) League within the next five years. Member countries enter national teams that compete with other countries around the world in a world championship. Currently, football is played throughout Rarita in various organized leagues, and many of its players have gone on to moderate success in the FSA for other countries. However, Rarita has never constructed a national team.

Rarita has noted that countries with competitive sports teams benefit economically. The money awarded to the country that wins the FSA championship is partially used to invest in local sports arenas and sports leagues. In addition, over 100 countries compete in the FSA each year, so the winning country’s global visibility increases, providing opportunities for more investment, tourism, and political influence which results in economic development and growth.

In order to pay for a national team, Rarita has allocated up to 995 million Doubloons (ð). Any funding that is required in excess of this initial investment will need to be raised through non-governmental sources.

Rarita is a country that consists of three economically and demographically diverse provinces: East Rarita, Central Rarita and West Rarita.

PROJECT OBJECTIVES

The Commissioner of Sport for Rarita, Hammessi Bayes, has hired your firm to help construct a “competitive” national team to build a brand for Rarita’s football program with the goal of achieving a positive economic impact for the country.

¹ This case study refers to the sport known in English as football in some parts of the world and soccer in other parts of the world.

Commissioner Bayes defines being “competitive” as meeting both of the following objectives:

1. Ranking within the top ten members of the FSA for the season within the next five years with
2. High probability of achieving an FSA championship within the next 10 years.

The key objectives of the project are as follows:

- Construct a competitive team using the defined constraints
- Analyze the impact of building a Football “brand” on Rarita’s economy over the next 10 years using key economic indices, probabilities, and a cost/benefit analysis.

In particular, your consulting firm is tasked with producing a report which includes the following:

- Objectives
- Team selection
- Rarita Economic impact
- Implementation Plan
- Assumptions
- Risk and Risk Mitigation Strategies
- Data and Data Limitations

DEFINED CONSTRAINTS

NEW LOAN PROVISION

Players from other national teams are made available through a new “loan” provision.² When lending players to other countries, the lending country generally charges a fee equal to 10% of the player’s salary.

As a result, Rarita may achieve extra revenue by lending higher ranking players to other countries.

FUNDING SOURCES

- Rarita will allocate an initial one-time sum of 995,000,000 Doubloons (ð) to be spent on players, other staff, and other expenses.
- Private (i.e., non-governmental) funding may be used to supplement the above.
- Net proceeds can be reinvested back into the team. Net proceeds consist of revenues offset by operating costs.

² Historical data do not reflect the loan provision.

DATA

Your team has access to the following data, which can be found [here](#).

- Information about current players in the FSA and Rarita including:
 - i. Player Statistics on performance metrics such as scoring, passing, defense and goalkeeping
 - ii. Salaries
- Information about 20 other countries' experience with fielding all levels of competitive football teams on a per capita basis, including:
 - i. Revenue broken down by matchday, broadcast and commercial for 2016 through 2020,
 - ii. Expense broken down by staff (player and other staff) and other expenses for 2016 through 2020,
 - iii. GDP for 2016 through 2020, and
 - iv. other pertinent data.
- Economic data for Rarita including:
 - i. Nominal Risk-free Spot Rate Yield Curves as of the beginning of the year for 2008 through 2021 for Rarita as a whole,
 - ii. Historical annual inflation rates for 1991 through 2020 for Rarita as a whole,
 - iii. GDP, GNI, population, population density, healthcare spending per person, and household savings rate for 2016 through 2020 and broken down by province for 2020, and
 - iv. Conversion rate from Euros (€) to Doubloons (ð).
- Information about Rarita's current football leagues including:
 - i. Team statistics,
 - ii. Financial information, and
 - iii. Other relevant information collected by the Commissioner for Sports.

DELIVERABLES

Hammessi Bayes requests your consulting firm to deliver a high-level report, informed by your research and analysis, that addresses each of the following items:

1. Objectives of Analysis

2. Team Selection

- A comprehensive analysis of team selection, including (but not limited to)
 - i. Criteria for selection,
 - ii. Probability ranges of the "success" of being competitive,
 - iii. The amount of spending required on assembling the team over the next 10 years, including discussions of the sources of non-governmental funding, if any, and
 - iv. Direct team revenues generated from having a "competitive" team

3. Economic Impact

Provide analysis of revenue and expenses for Rarita over the next 10 years assuming that the team selection results in a “competitive” team over the next 10 years, including (but not limited to):

- i. The impact of the proposed implementation plan on GDP and other economic indices and
- ii. Impact on related industries and Rarita provinces.

4. Implementation Plan

- Outline an implementation plan including a timeline. The proposal should include:
 - i. Team selection (players, years, loaners, homegrown, etc.),
 - ii. Sources of revenues, and
 - iii. Other pertinent information.
- Outline the key metrics to be reported and used to monitor progress of the proposed strategy over the next 10 years; include a schedule (frequency) for reporting these metrics.

5. Assumptions

- List all the assumptions used in the analysis. An Appendix to your report may be used to describe these assumptions in more detail if necessary.
- Identify the key assumptions that have the most significant impact on the recommended team construction and the economic impact associated with the team.
- Provide rationale for each key assumption.

6. Risk and Risk Mitigation Considerations

Provide a risk analysis that discusses potential risks and unforeseen events which may have a material impact on Rarita (e.g., economic, political, or reputation) that result from the launch of this new team. Your analysis should include, but is not limited to the following elements:

- Identify both quantifiable and qualitative key risks.
- Rank these key risks using appropriate actuarial metrics such as likelihood range of probable outcomes for the quantifiable risks.
- For these key risks, suggest possible risk mitigation techniques.
- Analyze sensitivity impact of actual experience differing from key assumptions. For each quantitative assumption provide recommended ranges to achieve the desired outcomes.

7. Data and Data Limitations

- Identify any data limitations (including missing data or data anomalies) and the impact of any such limitations on your team’s analysis.
- Identify any data sources used.

PROJECT EVALUATION CRITERIA

Hammessi Bayes' team will evaluate your firm's report, using the following criteria:

- Organization, form, clarity and cohesiveness of the report, as appropriate for Hammessi Bayes' committee (note that the committee includes very busy, high-level officials who represent a wide variety of disciplines, many of which are not quantitative in nature),
- Clear, concise, and complete responses to all items that are listed in the Deliverables section,
- Detailed mathematical analysis applying the concepts of probability, probability distributions, and time value of money (with explanations of any formulas, models, and other aspects to the analysis that you use) that are understood by technically minded individuals in Hammessi Bayes' committee,
- Creative and strategic recommendations,
- Secondary research including, as necessary, a bibliography showing a list of all sources cited throughout the report,
- Consideration of the provided data, including documentation of data limitations,
- Documentation of assumptions, and
- Adherence to all Submission Requirements.

SUBMISSION REQUIREMENTS

Your team's submission must contain *both* a written report that meets all criteria outlined below and supporting analysis. Please refer to the 2022 Student Research Case Study Challenge [official rules](#) for further information.

WRITTEN REPORT CRITERIA

Your written report should be addressed to Hammessi Bayes' Executive Committee. The Executive Committee will include Rarita's Finance Minister and an actuary from their staff, as well as key members of Hammessi Bayes' Sports Commission staff.

The report format must meet all the following criteria. If you fail to meet each of these items, your report will not be considered by Hammessi Bayes' team, and your fees will not be paid.

1. The report must be in Microsoft Word (docx or doc) format and must not be password protected.
2. The filename of your report must be the team name and a brief description of content for quick identification (Example: "WassamattaU Rarita FSA League Report 2022.docx")
3. The report must be written in English.
4. On the cover of your report, state your team name, team's university affiliation and each member's name. Do not include any email information or phone numbers for any team member.³
5. The report should be clearly readable and formatted to professional standards.
6. All elements of the report that are not original must be cited in a Bibliography addendum to the report. This requirement applies to written material, tables, graphs, and charts.

³ Since winning reports will be posted on the Society of Actuaries Research Institute website, the Society of Actuaries Research Institute, for reasons of privacy, does not recommend providing email addresses.

7. The report's length cannot exceed 2,500 words (roughly five single spaced pages). If your report exceeds this length, only the first 2,500 words will be considered by Hammessi Bayes' committee. The following items *will not count* toward this 2,500-word limit.
 - a. Graphs, charts, and other infographics including their captions of graphs and charts (note that large tables of data are not considered graphs or charts)
 - b. The Bibliography containing cited sources
 - c. An (optional) set of one or more Appendices. The appendices may contain:
 - i. Supporting calculations or data,
 - ii. Program code,
 - iii. Further elaboration on any narrative in the main body,
 - iv. Direct citations of external research or in general, or
 - v. Amplification on any item in the body narrative.
8. The report must address every item identified under "DELIVERABLES" in this document.
9. The report and its supporting calculations must be original work of your team for this case study. Previously published work should not be repurposed or submitted.

SUPPORTING ANALYSIS

As noted, your report must be submitted in Microsoft Word (docx or doc) format. You may optionally support your project with calculations done in any programming language. However, any supporting documents or files may be submitted only in Microsoft Word (docx or doc)—for example as an Appendix to the main report—or in Microsoft Excel (xlsx or xls) format. Formats other than Microsoft Word or Microsoft Excel will not be considered.

WHEN AND WHERE TO SUBMIT

Send your final submission to research@soa.org by forwarding the email confirmation of your Intent to Submit form and attaching your report and any supporting documents. Submissions must be received by 8:00 pm U.S. Central Standard Time on March 25, 2022. If you do not have an email confirmation of your Intent to Submit form, send an email with your submission to research@soa.org, copy all team members and include in your submission email your university affiliation as well as the names and email addresses of each team member *and* the name and email address of your faculty advisor.

THANKS TO OUR SPONSOR

The SOA is proud to have [Valani Global](#) as a platinum sponsor to help fund the 2022 Student Research Case Study Challenge.

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Serving as the research arm of the Society of Actuaries (SOA), the SOA Research Institute provides objective, data-driven research bringing together tried and true practices and future-focused approaches to address societal challenges and your business needs. The Institute provides trusted knowledge, extensive experience and new technologies to help effectively identify, predict and manage risks.

Representing the thousands of actuaries who help conduct critical research, the SOA Research Institute provides clarity and solutions on risks and societal challenges. The Institute connects actuaries, academics, employers, the insurance industry, regulators, research partners, foundations and research institutions, sponsors and non-governmental organizations, building an effective network which provides support, knowledge and expertise regarding the management of risk to benefit the industry and the public.

Managed by experienced actuaries and research experts from a broad range of industries, the SOA Research Institute creates, funds, develops and distributes research to elevate actuaries as leaders in measuring and managing risk. These efforts include studies, essay collections, webcasts, research papers, survey reports, and original research on topics impacting society.

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